

REMARKS

Claims 1, 3, 5-10, 12, and 14-17 are all the claims presently pending in the application. Claim 1 has been amended to more clearly define the invention and claim 2 has been canceled. Claims 14-17 have been withdrawn from prosecution. Claims 1 and 16-17 are independent.

These amendments are made only to more particularly point out the invention for the Examiner and not for narrowing the scope of the claims or for any reason related to a statutory requirement for patentability.

Applicant also notes that, notwithstanding any claim amendments herein or later during prosecution, Applicant's intent is to encompass equivalents of all claim elements.

Claims 1-3, 5-10, and 12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Takao, et al. reference (JP 5-81846A), in view of the Bemis reference (U.S. Patent No. 5,487,160).

This rejection is respectfully traversed in the following discussion.

I. THE RESTRICTION REQUIREMENT

The April 13, 2004, Office Action does not answer the substance of Applicant's traversal. Rather, the April 13, 2004, Office Action merely notes that the previous Office Action made the restriction requirement final.

Applicant hereby incorporates by reference herein the entirety of Applicant's previous traversals of the Examiner's prima facie insufficient restriction requirement.

Applicant continues to respectfully request withdrawal of the restriction requirement

and/or rejoinder of claims 14-17 for the reasons that have been previously submitted and which are incorporated herein by reference.

II. THE CLAIMED INVENTION

An exemplary embodiment of the claimed invention, as recited by independent claim 1, is directed to a magnetic disk apparatus which includes a plurality of disk enclosures, a plurality of first printed-circuit boards which are paired with the disk enclosures, and a second printed-circuit board which is detachably connected to the first printed-circuit board via a cable. The first printed-circuit boards mount circuits which have a first noise resistance property, and a circuit which holds parameters unique to the disk enclosure. The second printed-circuit board mounts circuits which have a second noise resistance property which is superior to the first noise resistance property. The second printed circuit board is also detachably connectable to an upper system. The circuits on each of the plurality of first printed-circuit boards include a recording/reproduction control circuit.

Conventional magnetic disk apparatus have only a single printed-circuit board for a single disk enclosure. Such single printed-circuit boards mount all of the circuits for controlling the disk enclosure. Thus, when the disk enclosure is exchanged for another disk enclosure, all of the circuits for each disk enclosure must also be exchanged because all of the circuits are on the same single printed-circuit board as the disk. This leads to a wasted cost in replacing all of the circuits for each disk enclosure and maintains a high cost for such a disk exchange. It also limits miniaturization of such a disk enclosure

By contrast, the present invention provides a disk apparatus which includes two separate printed-circuit boards. A plurality of first printed-circuit boards (e.g., 21 and/or 22 in the exemplary non-limiting embodiment of Fig.2) includes the disk enclosure and is only required to also include those circuits which are unique to the disk enclosure (e.g., such as the exemplary parameter holding circuit 4 in Fig. 1). A second printed-circuit board (e.g., 23 in the exemplary non-limiting embodiment of Fig. 2) includes other circuits. Thus, when the disk enclosure requires an exchange with another disk enclosure, only those circuits on the first printed-circuit board are exchanged, thereby significantly reducing the cost of the exchange.

Additionally, the exemplary embodiment of the present invention includes a recording/reproduction control circuit on the first printed-circuit board. The recording/reproduction control circuit inputs and outputs high-frequency signals in order to control the circuit in the first circuit board such as the analog/digital converter.

If the recording/reproduction control circuit is placed in the second printed circuit board, then lines for the high-frequency signals become long to extend from the second printed circuit board to the first printed circuit board, whereby the high frequency signals in the long line strongly interfere with the recording signal, the reproduced signal and other signals, which may cause errors of the recording signal, errors of the reproduced signal and defective operation in the circuits of the first printed circuit board.

Further, if the recording/reproduction control circuit is placed in the second printed circuit board, then the high frequency is delayed due to capacitance between the long lines and ground. The phase delay of the high frequency is proportional to the frequency, and the phase delay

causes a defective timing sequence for reading and writing data.

Therefore, it is effective to place the recording/reproduction control circuit in the first printed circuit board.

III. THE PRIOR ART REJECTION

The Examiner alleges that the Bemis reference would have been combined with the Takao et al. reference to form the claimed invention.

As previously explained, Applicant submits, however, that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of the claimed invention. Applicant incorporates herein by reference in their entirety the traversals that were set forth in the response that was filed on December 19, 2003.

Further, Applicant respectfully submits that none of the applied references teaches or suggests a recording/reproduction control circuit on the first printed-circuit board.

Rather, and in stark contrast, the Takao et al. reference only discloses that the first printed-circuit board includes a recording/reproduction amplifier.

The present invention has a first printed-circuit board that includes a recording/reproduction control circuit. As explained above, this feature is important for reducing the noise interference with the high-frequency signals.

The Bemis reference does not remedy the deficiencies of the Takao et al. reference.

Therefore, the Examiner is respectfully requested to withdraw this rejection of claims 1-3, 5-10, and 12.

IV. FORMAL MATTERS AND CONCLUSION

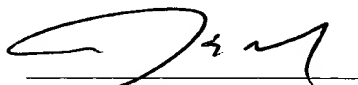
In view of the foregoing amendments and remarks, Applicant respectfully submits that claims 1, 3, 5-10, 12 and 14-17, all the claims presently pending in the Application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the Application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

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James E. Howard
Registration No. 39,715

McGinn & Gibb, PLLC
8321 Old Courthouse Rd., Suite 200
Vienna, Virginia 22182
(703) 761-4100
Customer No. 21254